

Reduce Incidence of Delirium in Elderly Hip Fracture Patients

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Mission Statement

To reduce the incidence of delirium in hip fracture patients above age of 60 at risk of developing delirium admitted to TTSH Ward 12C & 12D from 20% to 10% within the next 6 months

Team Members

	Name	Designation	Department
Team Leader	Ms Ku Li Ting	Case Manager	Orthopaedics
Team Members	Dr Ong Eng Hui	Associate Consultant	GRM
	Ms Stephanie Tai	Case Manager	Orthopaedics
	Ms Yap Yan Mei	Physiotherapist	Physiotherapy
	Ms Nani Adilla Binte Zailani	Occupational Therapist	Occupational Therapy
	Ms Sarah Tiaw Lijane	Senior Staff Nurse	Ward 12D
	Ms Nursyahidah Binte Kamarnzaman	Staff Nurse	Ward 12C

Advisors: Dr Rani Ramason, Dr Ivan Chua, Dr Daniel Lee Kwang Ti

Mentor: Dr William Chan

Sponsors: Adj A/Prof Lee Keng Thiam & Ms Maheas D/O Thanmugham

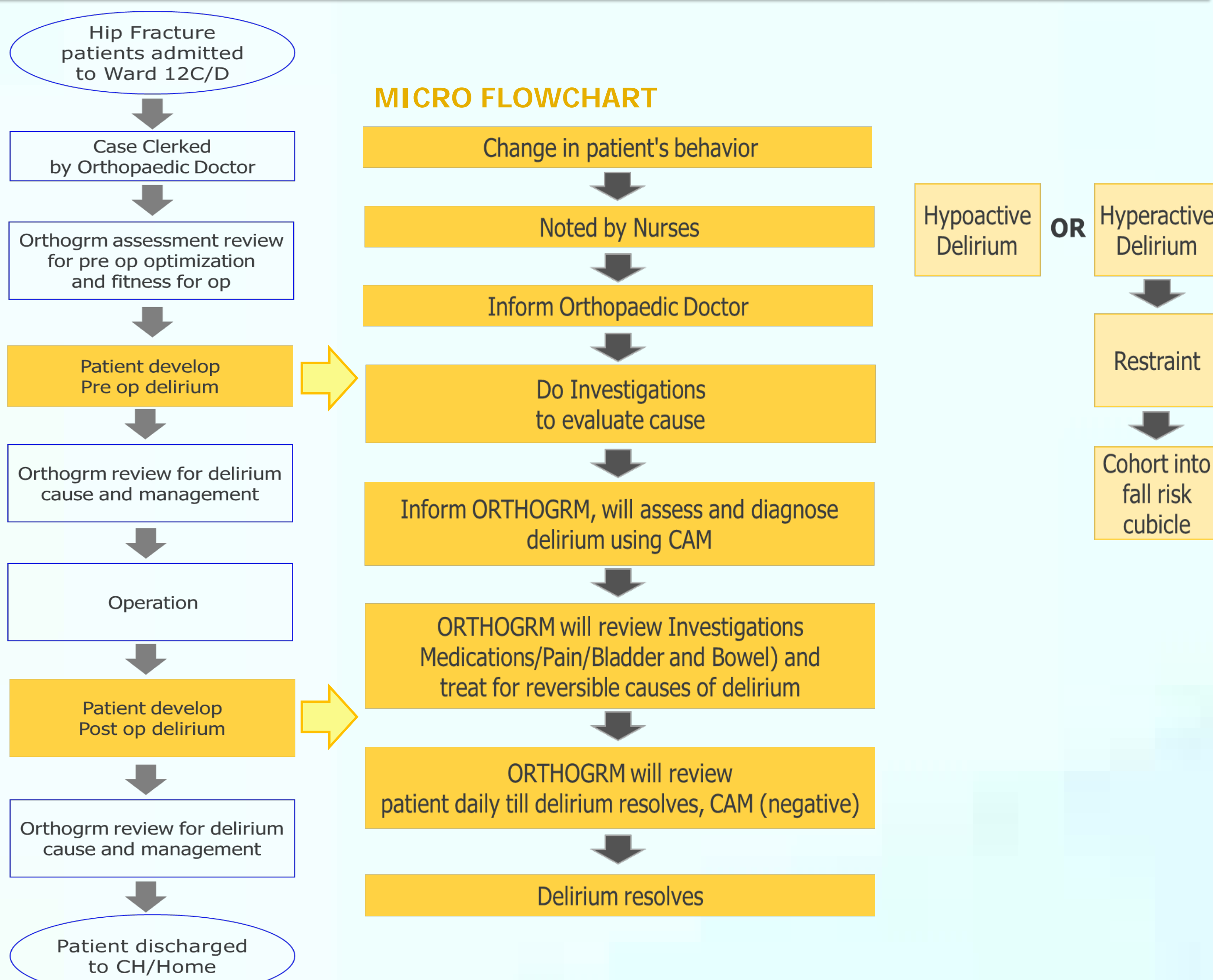
Evidence for a Problem Worth Solving

1. Delirium is an acute mental disturbance characterized by confused thinking and disrupted attention usually accompanied by disordered speech and hallucinations.
2. Delirium in hip fractured patients is a frequent complication, with an incidence of rate varying 13%-70%.¹
3. Post operative delirium is associated with poor outcomes, such as impaired functional and cognitive recovery, increased hospital length of stay, higher cost and increased mortality.²
4. Delirium can be reduced by early surgery, early delirium detection, aggressive pain management, early mobilization and early treatment of post-operative complications.³

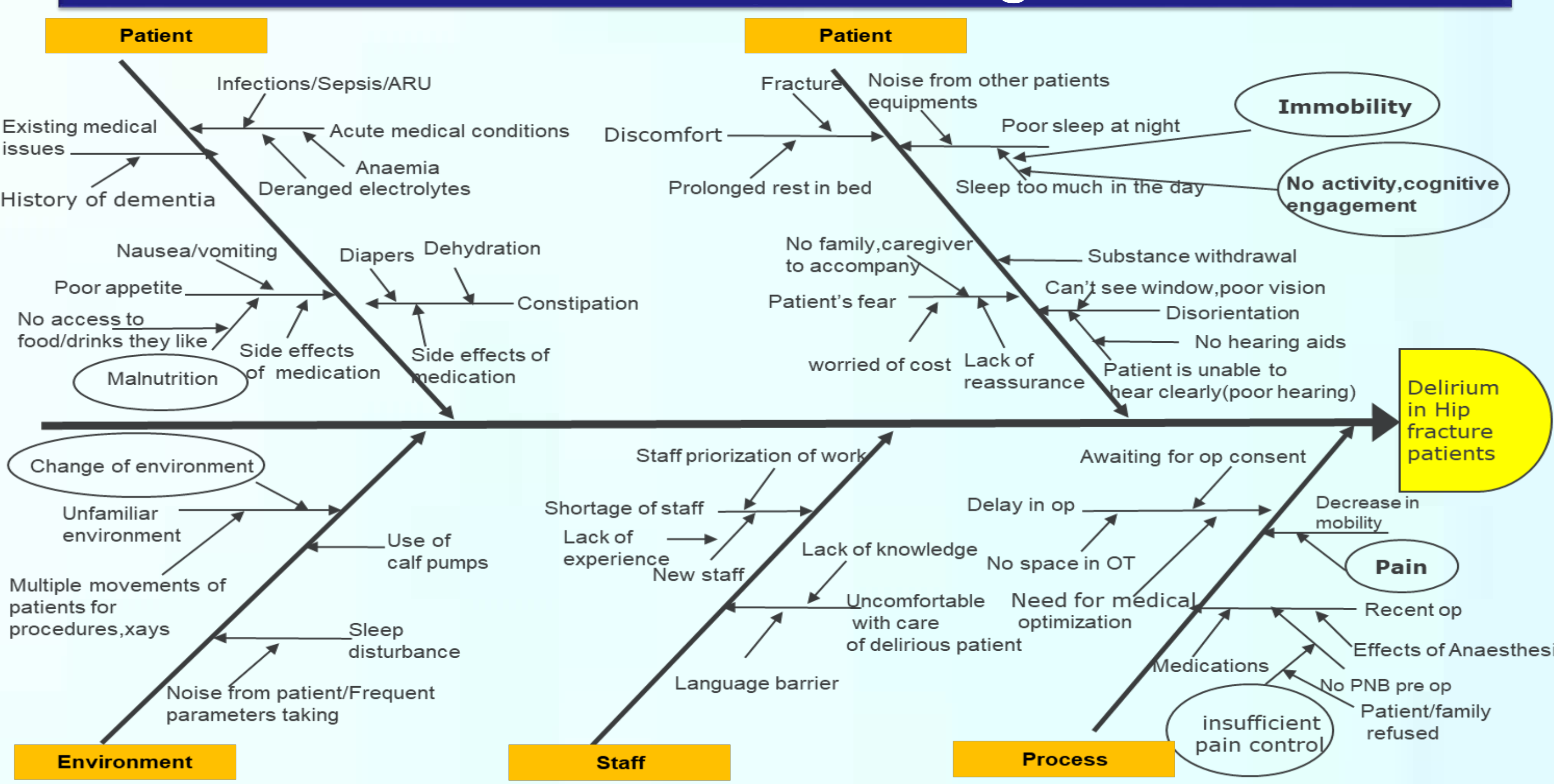
References:

1. Bruce AJ. The Incidence of Delirium Associated with Orthopaedic Surgery: a Meta-Analytic Review. *Int Psychogeriatr*. 2007 Apr; 19(2):197-214.
2. Carpintero P. Complications of Hip Fractures: A review. *World J Orthop*. 2014 Sep 18;5(4):402-411
3. Mok WQ. Implementation of an Integrated Delirium Prevention System of Care for Elderly Patients with Hip Fractures. *IJIC* 2017;17(5):A432.

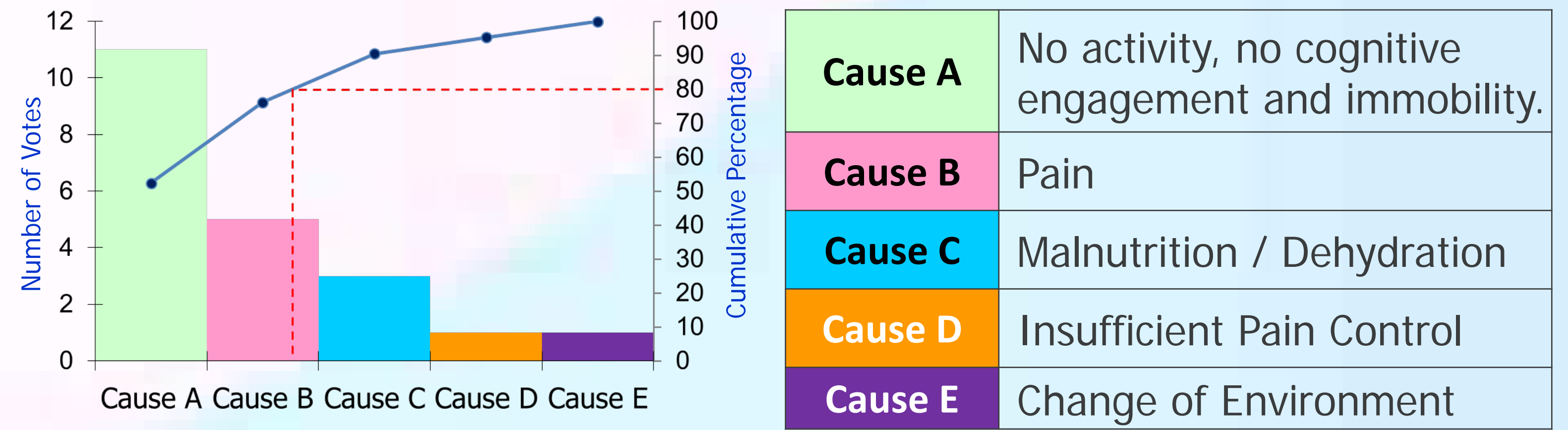
Flow Chart of Process



Cause and Effect Diagram



Pareto Chart

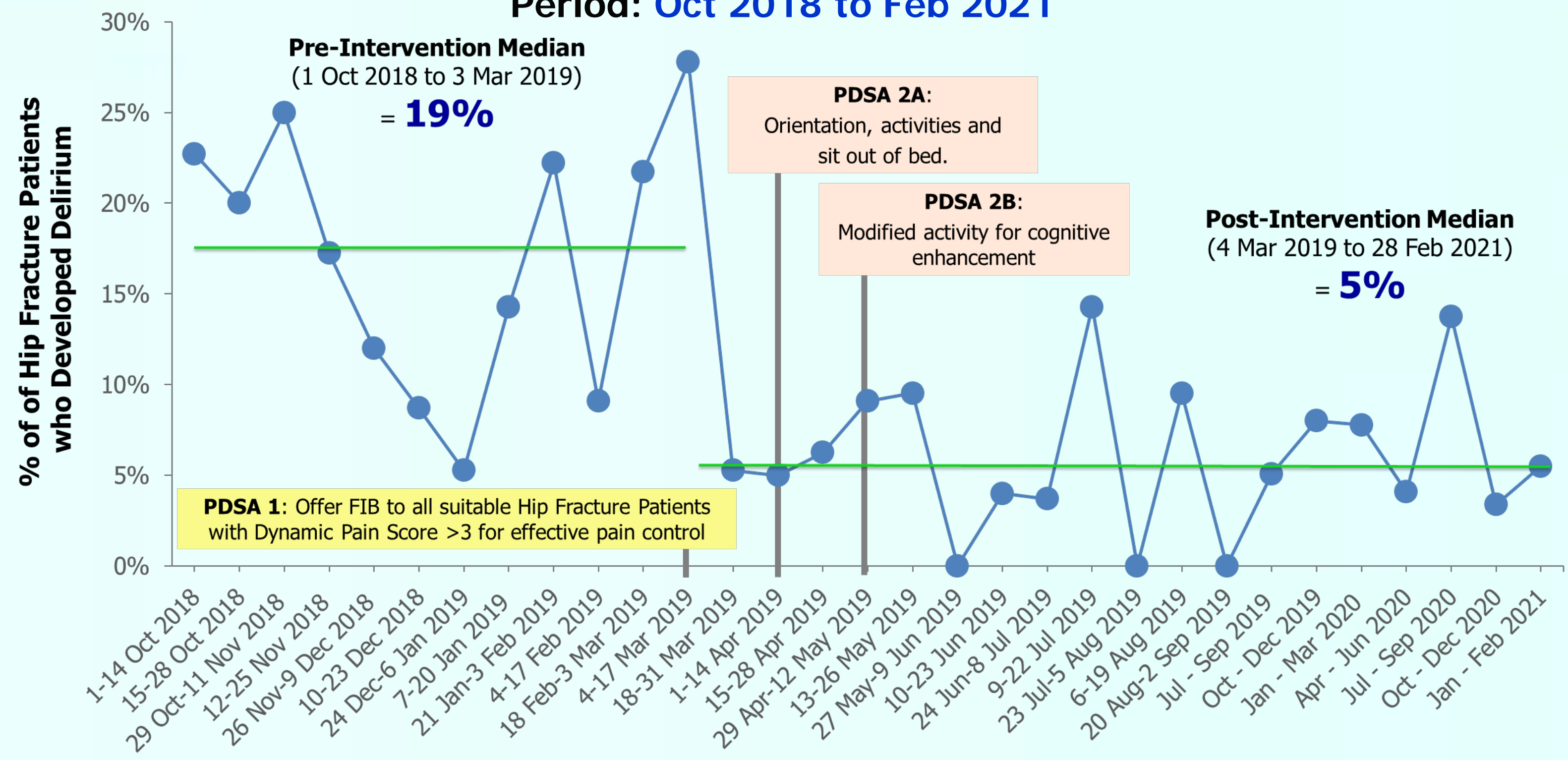


Implementation

Root Cause	Intervention	Implementation Date
Cause B: Pain	PDSA 1: Offer FIB (Fascia Iliaca Block) to all suitable Hip Fracture Patients with Dynamic Pain Score >3 for effective pain control	12 Mar 2019
Cause A: No activity, no cognitive engagement and immobility	PDSA 2A: Orientation, activities and sit out of bed.	1 Apr 2019
	PDSA 2B: Modified activity for cognitive enhancement	2 May 2019

Results

Percentage of Hip Fracture Patients who Developed Delirium Period: Oct 2018 to Feb 2021



Hip Fractures Cases	1-14 Oct 18	15-28 Oct 18	29 Oct 18 - 11 Nov 18	12-25 Nov 18	26 Nov 18 - 9 Dec 18	10-23 Dec 18	24 Dec 18 - 6 Jan 19	7-20 Jan 19	21 Jan 19 - 3 Feb 19	4-17 Feb 19	18 Feb 19 - 3 Mar 19	4-17 Mar 19	18-31 Mar 19	1-14 Apr 19	15-28 Apr 19	29 Apr 19 - 12 May 19	13-26 May 19	27 May 19 - 9 Jun 19	10-23 Jun 19	24 Jun 19 - 8 Jul 19	9-22 Jul 19	23 Jul 19 - 5 Aug 19	6-19 Aug 19	20 Aug 19 - 2 Sep 19	3-16 Sep 19	17-30 Sep 19	1-14 Oct 19	15-28 Oct 19	29 Oct 19 - 11 Nov 19	12-25 Nov 19	26 Nov 19 - 9 Dec 19	10-23 Dec 19	24 Dec 19 - 6 Jan 20	7-20 Jan 20	21 Jan 20 - 3 Feb 20	4-17 Feb 20	18 Feb 20 - 3 Mar 20	4-17 Mar 20	18-31 Mar 20	1-14 Apr 20	15-28 Apr 20	29 Apr 20 - 12 May 20	13-26 May 20	27 May 20 - 9 Jun 20	10-23 Jun 20	24 Jun 20 - 8 Jul 20	9-22 Jul 20	23 Jul 20 - 5 Aug 20	6-19 Aug 20	20 Aug 20 - 2 Sep 20	3-16 Sep 20	17-30 Sep 20	1-14 Oct 20	15-28 Oct 20	29 Oct 20 - 11 Nov 20	12-25 Nov 20	26 Nov 20 - 9 Dec 20	10-23 Dec 20	24 Dec 20 - 6 Jan 21	7-20 Jan 21	21 Jan 21 - 3 Feb 21	4-17 Feb 21
No. of cases	22	25	24	29	25	23	19	21	18	22	23	18	19	20	16	22	21	23	25	27	14	17	21	18	118	125	103	49	80	118	91																															
No. of Delirium	5	5	6	5	3	2	1	3	4	2	5	5	1	1	1	2	2	0	1	1	2	0	2	0	6	10	8	2	11	4	5																															
%	23%	20%	25%	17%	12%	9%	5%	14%	22%	9%	22%	28%	5%	5%	6%	9%	10%	0%	4%	4%	14%	0%	10%	0%	5%	8%	8%	4%	14%	3%	5%																															

Cost Savings

	Pre-Intervention (Period: 1-14 Oct 18)	Post-Intervention (Period: 1-14 Apr 19)
Total No. of Hip Cases	22	20
No. of Delirium Cases	5	1
Total Delirium Days	43	4
No. of Bed Days Saved	43 - 4 = 39 days	
Cost of Bed Days Saved	39 x \$1114 = \$43,446	
Cost Saved in 1 Month	\$43,446 x 2 = \$86,892	
Cost Saved in 1 Year	\$86,892 x 12 = \$1,042,704	

Problems Encountered

1. Activities
 - Not easy, need manpower and time to engage patients with activities.
 - Not sure what activity is suitable for patient
2. Music (Radio)
 - Radio goes missing frequently !
 - Cost involved to purchase more radios.

Strategies to Sustain

1. Standardisation and spreading to other wards
2. Obtain feedback from staff and modify intervention so it is feasible and sustainable
3. Review the results to ensure the interventions work and becomes part of daily routine to patient's care
4. Provide reminders and education to staff involved